

US-PAT-NO: 5359205  
DOCUMENT-IDENTIFIER: US 5359205 A  
TITLE: Electrically erasable memory elements characterized by reduced current and improved thermal stability

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Brief Summary Text - BSTX (6):

In a perfect semiconductor lattice with no impurities or lattice defects, an intrinsic semiconductor--no charge carriers are present at zero Kelvin since the valence band is filled with electrons and the conduction band is empty. At higher temperatures, however, electron-hole pairs generated as valence band electrons are excited thermally across the band gap to the conduction band. These thermally generated electron-hole pairs are the only charge carriers present in an intrinsic semiconductor material. Of course, since the electrons and holes are created in pairs, the conduction band electron concentration (electrons per cubic centimeter) is equal to the concentration of holes in the valence band (holes per cubic centimeter). It is well known, but worth emphasizing, that if a steady state carrier concentration is to be maintained, there must be recombination of the charge carriers at the same rate that they are generated. Recombination occurs when an electron in the conduction band makes a transition to an empty state (hole) in the valence band, either directly or indirectly through the agency of a mid-gap recombination center, thus annihilating the pair.

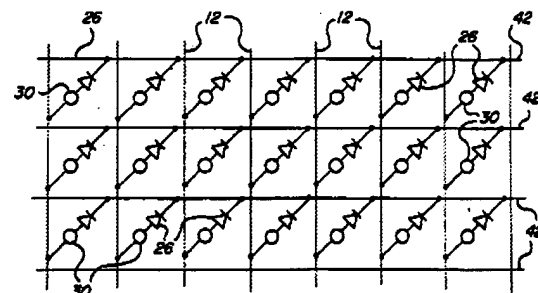


FIG-3

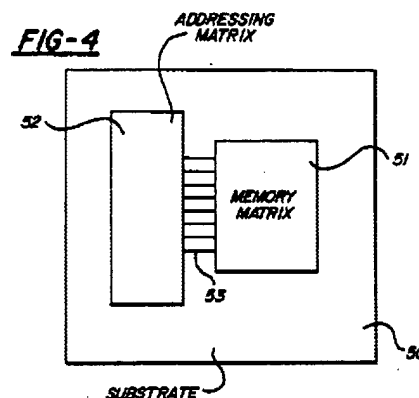


FIG-4

U	Document ID	Issue Date	Pages	Title
66	US 5359205 A	19941028	21	Electrically erasable memory elements characterized by reduced current and improved thermal stability
67	US 5341328 A	19940823	21	Electrically erasable memory elements characterized by reduced current and improved thermal stability
68	US 5335219 A	19940802	37	Homogeneous composition of microstructures, semiconductor devices
69	US 5326985 A	19940705	5	Bipolar doped semiconductor structures
70	US 5182647 A	19930126	7	High resolution charge-coupled devices